41. On the Parasitic Nematoda collected from Mammalian Hosts which died in the Gardens of the Zoological Society of London during the years 1919–1921; with a description of three new Genera and three new Species.

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(Text-figures 1–10.)

The parasites referred to in this paper were collected from mammals which died in the Gardens from October 1919 to June 1921, during which period the writer held the position of Honorary Parasitologist to the Society.

In a previous Report, published in 1920 (1), I gave a list of the parasites which were collected during the first eight months of this period. Certain of these are again mentioned in this paper, and to avoid confusion are marked in the Systematic List with an asterisk (*).

Leiperenia galebi, from the Indian Elephant (*Elephas indicus*), and *Galoncus tridentatus*, from the Clouded Leopard (*Felis nebulosa*), have both been described as new species by Dr. M. Khalil in previous papers in 1922 (2). The methods employed in collection have been referred to in my Report of June 1920.

The whole of the material has been worked out in the Helminthological Department of the London School of Tropical Medicine under the Directorship of Prof. R. T. Leiper, to whom I am indebted for his kind assistance and many valuable suggestions.

In all, 43 species were collected from 36 hosts. Three of these are apparently new to science and are described below.

It is necessary to create three new Nematode genera:—

(1) *Troglostrongylus*, for a new species of Metastrongylid worm found in the frontal sinus of a Leopard Cat (*Felis bengalensis*). Type *T. troglostrongylus*, gen. n., sp. n.

(2) *Cylicospirura*, for the Spirurid from the stomach of the Tiger originally described as *Spiroptera subæqualis* by Molin. Type *C. subæqualis* (Molin, 1860), gen. n.

(3) *Papillosetaria*, for a new species of Filariid worm from the peritoneal cavity of *Tragulus stanleyanus*. Type *P. traguli*, gen. n., sp. n.

In *Tragulus stanleyanus* a second new species also occurred; this I have named *Setaria javensis*, sp. n.

Systematic List of Nematoda collected.

Rhabdiasoidea R. & H., 1916.

Atractidæ Travassos, 1919.

**Leiperenia galebi* Khalil, 1922.

**Probstmayria vivipara* Ransom, 1907.

Oxyuroidea R. & H., 1916.

Oxyuridæ Cobbold, 1864.

**Oxyuris equi* Schrank, 1788.

Ascaroidea R. & H., 1915.

Ascaridæ Cobbold, 1862.

Ascarinæ Travassos, 1913.

Ascaris transfuga Rud., 1819.

Belascaris marginata (Rud., 1802), Gedoelst, 1911.

Belascaris mystax (Zeder, 1800), Leiper, 1907.

Toxascaris limbata R. & H., 1911.

Toxascaris leonina (v. Linstow, 1902), R. & H., 1911.

Heterocheilidæ R. & H., 1915.

Goezinæ Travassos, 1920.

**Contracœcum osculatum* (Rud., 1802), Baylis, 1920.

Heterakidæ R. & H., 1914.

Subulurinæ Travassos, 1914.

Subulura distans (Rud., 1809), R. & H., 1912.

Strongyloidea Weinland, 1858.

Strongylidæ Baird, 1853.

Strongylinæ Stossich, 1898.

Strongylus vulgaris (Looss, 1900), R. & H., 1909.

Strongylus edentatus (Looss, 1900), R. & H., 1909.

Cylicostomum nassatum (var. *parvum*), Yorke & McFie, [1918.

Cylicostomum goldi Boulenger, 1916.

Cylicostomum bicoronatum (Looss, 1900), Gedoelst, 1903.

Œsophagostomum apiostomum (Willach, 1891), R. & H., [1905.

Ancylostominæ R. & H., 1909. [1909.

Ancylostoma malayanum (Alessandrini, 1905), R. & H.,

Ancylostoma ceylanicum Looss, 1911. [1909.

Ancylostoma pluridentatum (Alessandrini, 1905), R. & H.,

Ancylostoma caninum (Ercolani, 1859), Hall, 1915.

**Ancylostoma conepati* Solanet, 1911.

Galoncus perniciosus (v. Linstow, 1886), Railliet, 1918.

Galoncus tridentatus Khalil, 1922.

**Uncinaria criniformis* (Goeze, 1782), Railliet, 1899.

Characostomum asmilium R., H. & Joyeux, 1913.

TRICHOSTRONGYLIDÆ Leiper, 1912.
TRICHOSTRONGYLINÆ Leiper, 1908.
**Hæmonchus contortus* (Rudolphi, 1803), Cobbold, 1898.

METASTRONGYLIDÆ Leiper, 1908.
METASTRONGYLINÆ Leiper, 1908.
**Troglostrongylus troglostrongylus*, gen. n., sp. n.

SPIRUROIDEA R. & H., 1915.
SPIRURIDÆ Oerley, 1885.
SPIRURINÆ Railliet, 1915.
Habronema chevreuxi Seurat, 1913.
Spirocerca sanguinolenta (Rud., 1819), R. & H., 1911.
Streptopharagus armatus Blanc, 1912.
Cylicospirura subæqualis (Molin, 1860), gen. n.

RICTULARIIDÆ Railliet, 1916.
Rictularia affinis Jägerskiold, 1910.
Rictularia cahirensis Jägerskiold, 1910.
Rictularia plagiostoma (Wedl, 1861), Will.-Suhm 1873.

GNATHOSTOMIDÆ R. Blanchard, 1895.
Gnathostoma spinigerum Owen, 1836.

FILAROIDEA Weinland, 1858.
FILARIIDÆ Claus, 1885.
FILARIINÆ Stiles, 1907.
**Filaria gracilis* Rudolphi, 1809.
Filaria martis Gmelin, 1790.
Setaria labiato-papillosa (Aless., 1838), R. & H., 1911.
Setaria hornbyi Boulenger, 1920.
Setaria javensis, sp. n.
Papillosetaria traguli, gen. n., sp. n.

TRICHUROIDEA Railliet, 1916.
TRICHURIDÆ Railliet, 1915.
TRICHURINÆ Ransom, 1911.
Trichuris ovis (Abildg., 1795), Smith, 1908.
Trichuris trichiura (Linnæus, 1771), Stiles, 1901.

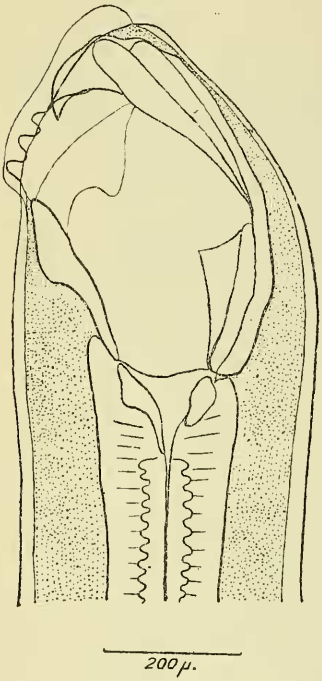
ANCYLOSTOMA PLURIDENTATUM (Aless., 1905), R. & H., 1909.

In 1905, Alessandrini described a Hookworm from *Felis mitis*, Brazil, which he named *Uncinaria pluridentatum* (3). In 1909, Railliet and Henry placed the species in the genus *Ancylostoma* (4).

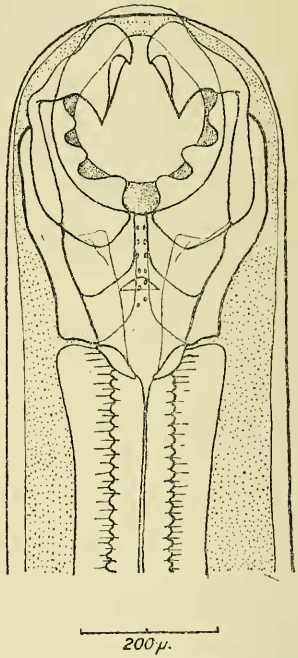
Looss, in his Monograph on the Hookworms (1911) (5), refers

to, and gives a brief description of the worm, with figures copied from the original paper by Alessandrini. The only measurements given are the size of the body. In 1916, Clayton Lane (**6**) suggested that *A. pluridentatum* might not be a valid species; he also suggested that if Alessandrini had not made an error and the species was valid, it should be made the type of a new genus.

Text-fig. 1.



Text-fig. 2.



Ancylostoma pluridentatum (Aless.).

Mouth capsule. Lateral view. Mouth capsule. Dorsal view.

My material was collected from the small intestine of *Felis tigris*, Malay States.

I have compared the general measurements, mouth capsule, and bursa with the original description and figures given by Alessandrini, and find that they agree in all but three points:—

(1) The length of the body. Measurements given by Alessandrini: Male 6–8 mm., female 6·5–9 mm.
Measurements of my material from *Felis tigris*:
Male 8·5–9 mm., female 9–10·5 mm.

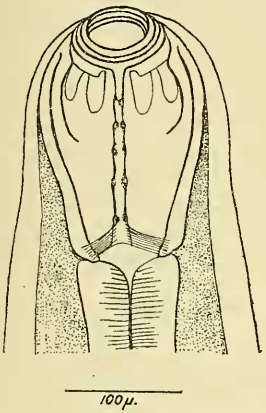
(2) The appearance of the mouth capsule when viewed from the dorsal respect. In my specimens the mouth capsule appears much deeper than the mouth capsule in Alessandrini's figure.

(3) Length of the spicules:
Alessandrini's measurement = 960 μ.
Material from *Felis tigris* = 800 μ.

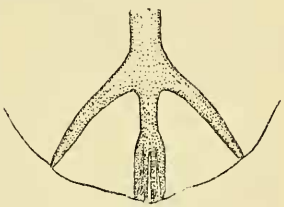
These differences do not seem to indicate that the worms from *F. tigris* are of a different species from those described by Alessandrini from *F. mitis*. The variations noted might well be ascribed to the occurrence in a different host.

It would seem that the figures of the mouth capsule, as given by Alessandrini, were made from somewhat flattened material; I have therefore prepared new figures of the head from the dorsal and lateral aspects (text-figs. 1 & 2).

Text-fig. 3.



Text-fig. 4.



Characostomum asmilium R., H. & Joyeux.
Mouth capsule. Dorsal view. Dorsal ray of bursa. ♂.

Characostomum asmilium R., H. & Joyeux, 1913.

This species was first described by Railliet, Henry and Joyeux in 1913 from *Cercopithecus patas* (**7**).

These authors describe the worm fully, but do not give figures of the bursa of the male or the cephalic extremity from the dorsal aspect.

Two males were found in the small intestine of a Pig-tailed Macaque (*Macacus nemestrinus*) and one female from a Slow Loris (*Nycticebus tardigradus*).

The opening of the mouth is not terminal, but turns slightly dorsalwards as in *Ancylostoma* and *Necator*.

The buccal aperture is surrounded by three concentric chitinous rings; these have no setæ. The dorsal gutter is very well marked, and is rugose on the dorsal aspect.

A figure is given illustrating these two points, as they are not mentioned in the description of the original material. A diagram of the dorsal ray of the bursa in the male is also given.

Metastrongylinæ Leiper, 1908.

Troglostrongylus troglostrongylus, gen. n., sp. n.

In a previous paper (1) I made reference to a parasite which I found in the frontal sinus of a Leopard Cat (*Felis bengalensis*). At that time I was uncertain as to its systematic position, and provisionally diagnosed it as a "species inquirenda" in the genus *Synthetocaulus*, with which it has certain affinities. The female, however, is ovoviviparous, and the male has remarkably long spicules with palmate expansions covered with minute spines, which characters not only establish it as a new species, but separate it from *Synthetocaulus*.

It also has certain characters in common with the genus *Hæmostrongylus*, a species of which (*H. subcrenatus*) was described by Railliet and Henry, from the bronchi of a Leopard, in 1913. The disposition of the rays of the bursa in this worm is different; in *H. subcrenatus* the postero-lateral and median-lateral rays are fused, whereas in *T. troglostrongylus* the antero-lateral and median-lateral rays are joined. *H. subcrenatus*, moreover, has no accessory piece (8).

On these grounds, therefore, I have considered it necessary to create a new genus—*Troglostrongylus*—for this worm.

It would appear that the only other Nematode parasite which has the frontal sinus as a habitat is the worm *Filaroides mustelarum*, which lives in the frontal sinus of the Weasel (*Mustela vulgaris*) (9).

The systematic position of *F. mustelarum* is somewhat obscure, but it probably falls into the Spiruroidea, which has no affinities with the Strongyloidea, into which *T. troglostrongylus* belongs. A comparison of these two forms shows certain points of similarity in structure which seem to indicate parallelism in evolution due perhaps to similarity in habitat.

Troglostrongylus, gen. n.

Generic diagnosis.—Metastrongylinæ: Head simple, two lips, no buccal capsule. Cuticle covered with fine longitudinal stria tions. The bursa of the male is small in comparison with the length of the body. The ventral rays are short, and each formed

of two rays fused. The antero-lateral and median-lateral rays are fused together to form one large ray. The postero-lateral and externo-dorsal rays are single and approximately the same size. The dorsal ray is single and broad, owing to the fusion of all its elements.

The spicules are long and equal, they are tesselated throughout and carry pectinate lamellæ along their inner edges; each ends in a palmate expansion, the fingers of which are webbed with a cuticular expansion which bears minute spines. The female is ovoviviparous.

Type-species, *Troglostrongylus troglostrongylus*, sp. n.

Troglostrongylus troglostrongylus, sp. n.

Host. Felis bengalensis.

Locality. India.

Habitat. Frontal sinus.

Specific diagnosis.—Troglostrongylus: Thin filiform greyish-white worms, tapering rather abruptly at each end.

The mouth is guarded by two inconspicuous lips, each bearing two minute papillæ. There is a slight cuticular expansion at the head and extending about 1 mm. along the body; on this cuticular expansion are faint transverse striations. The rest of the worm is covered with very fine longitudinal striations.

The œsophagus in both sexes is of the simple muscular bulb type, measuring 500 μ in length and 100 μ in diameter at the bulb. The excretory pore and nerve ring are situated 250 μ from the anterior end of the body.

Male.—Measures 12 mm. in length by ·4 mm. in breadth. The bursa is small and rounded, with a slight median notch in its margin at the point where the distal end of the dorsal ray meets it. The diameter of the bursa is ·5 mm. The rays of the bursa are somewhat asymmetrical. The ventral rays are small and double; the antero-lateral and median-lateral rays are fused into one large ray.

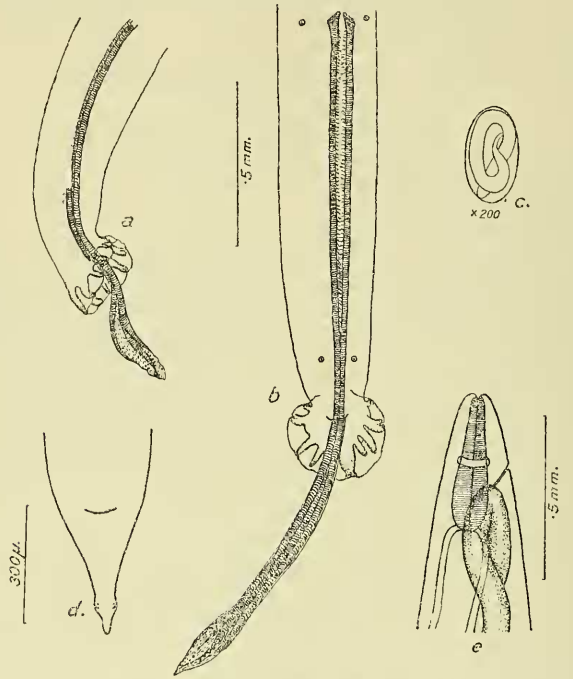
The postero-lateral and externo-dorsal rays are single and short, in some cases not reaching the margin of the bursa. The elements of the dorsal ray are fused into one large, broad ray, which terminates in the median notch of the bursa.

The spicules are equal and measure 2·25 mm. in length; they are dark brown in colour and are tesselated. In addition, along the inner edge of each there are short transverse comb-like projections, which may be single or sometimes divide into two or even three branches. In the distal third these interlock and produce a union of the two spicules. Each spicule ends in a palmate expansion, the cuticular web of which is covered with minute spines. The accessory piece is dagger-shaped and measures 270 μ in length.

Female.—Measures 20–24 mm. in length by ·7 mm. in breadth. The tail tapers sharply and ends in a blunt point, near the end of which are situated two small laterally placed papillæ. The anus is 300 μ from the tip of the tail.

The vulva is situated just behind the middle of the body.

Text-figure 5.



Troglostrongylus troglostrongylus, gen. n., sp. n.

a. Caudal extremity of male. Lateral view.
b. Caudal extremity of male. Ventral view.
c. Egg. × 200.
d. Caudal extremity of female.
e. Head of female. Lateral view, showing excretory pore.

The eggs contain a living embryo at birth, and hatching takes place almost immediately, embryos being found in the nasopharynx, lungs, œsophagus, stomach, and intestines. The eggs measure 87 μ by 70 μ. Embryos found in the nasopharynx measured 240 μ.

Spirurinæ Railliet, 1915.

Cylicospirura subæqualis (Molin, 1860), gen. n.

In 1913, Seurat described a Spirurid from the stomach of *Felis ocreata* Gmelin (10). This worm he considered to be identical with *Spiroptera subæqualis* Molin (11), and placed it in the genus *Spirocerca*, as it conformed in many respects to the type-species of that genus (*Spirocerca sanguinolenta* of the Dog).

He published a description with a drawing of the mouth capsule of the worm taken from a single specimen, which he states was very much flattened by the pressure of the cover-glass. My material consisted of three females and one male collected from the stomach of a Tiger (*Felis tigris*), Malay States.

The measurements of these specimens correspond in every way to those of the worm described by Seurat from *F. ocreata*, except in regard to the mouth capsule, which is much wider in the latter, due no doubt, as Seurat suggests, to the pressure. This writer also states that the chitinous teeth in the mouth capsule are tricuspid, whereas in my specimens they are bicuspid.

Von Drasche in 1882 revised Molin's type material, and figures the cephalic and caudal extremities of the male. In his figure of the mouth-parts he shows each of the chitinous teeth as bicuspid (12).

I have also compared my material with an unpublished drawing of the cephalic extremity made by Prof. R. T. Leiper from Molin's type-specimens in the Vienna Museum, and I find it agrees in every respect.

Seurat, therefore, has either made an error of observation, due perhaps to the flattened state of his specimens, or he has confused another species with *S. subæqualis*, of Molin.

Moreover, as the mouth capsule of this worm with its armature of teeth in no way conforms to the type of the genus *Spirocerca* (*S. sanguinolenta*), I wish to propose a new genus, *Cylicospirura*, with *C. subæqualis* as the type-species.

Cylicospirura, gen. n.

Generic diagnosis.—Spirurinæ: Body elongated, tapering slightly anteriorly. Mouth circular, surrounded by six small papillæ. The mouth capsule is deeper and conical in shape, with the apex of the cone in apposition to the anterior end of the œsophagus. It is provided with six triangular chitinous plates arranged radically, each of the internal free ends of which terminates in a bicuspid tooth which projects slightly beyond the entrance to the mouth capsule.

The tail of the male is twisted spirally, and is furnished with a narrow symmetrical bursa, which has four pairs of preanal and two pairs of postanal papillæ. The spicules are unequal, the

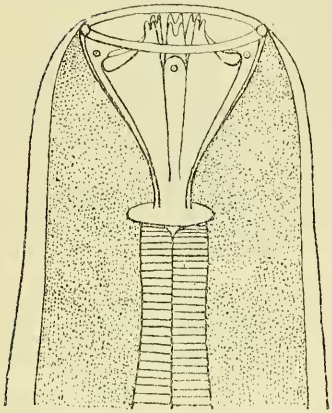
long spicule being in the type-species more than five times the length of the short spicule.

The vulva is situated in the anterior half of the body. The female is ovoviviparous.

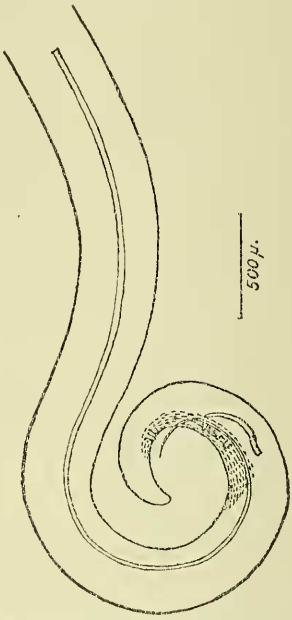
Endoparasitic in the stomach of Carnivora.

Type-species, *Cylicospirura subæqualis* (Molin, 1860), gen. n.

Text-fig. 6.



Text-fig. 7.



Cylicospirura subæqualis (Molin), gen. n.

Mouth capsule. Caudal extremity of male.

Streptopharagus armatus Blanc, 1912.

In 1912, Blanc gave a short description (without figures) (**13**) of this species in what he termed a preliminary note. As he does not seem to have continued his researches on this worm, I have made some drawings from material collected from a Pig-tailed Macaque (*Macacus nemestrinus*) from India.

No mention is made in the original description of the gubernaculum in the male; this was probably an oversight.

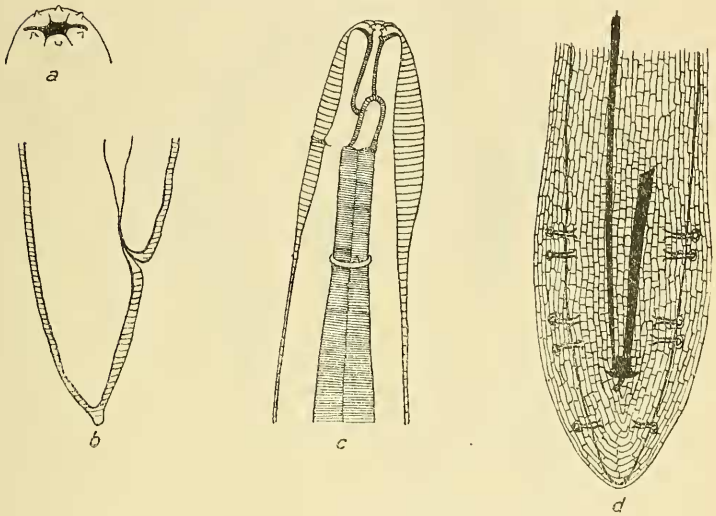
Spiroptera pigmentata v. Linstow, 1897 (**14**), from *Cercopithecus albigularis* Africa, undoubtedly falls into this genus, but must be regarded as a separate species on account of the difference in the length of the spicules.

Setaria Viborg, 1795.

From the peritoneal cavity of *Tragulus stanleyanus*, from Java, two species of *Setaria* were recovered: of one species only four females were found, and of the other one male and one female.

Both of these species are apparently new, and one falls into a new genus.

Text-figure 8.



Streptopharagus armatus Blanc.

a. Mouth.
b. Caudal extremity of female.
c. Cephalic extremity of male.
d. Caudal extremity of male, showing spicules and accessory piece.

Setaria javensis, sp. n.

Host. Tragulus stanleyanus.
Locality. Java.
Habitat. Peritoneal cavity.
Material. Four female worms; no males were collected.

Specific diagnosis.—Setaria: Body tapering gradually towards the anterior end of the body; head rounded and not separated from the rest of the body.

The peribuccal ring is ovoid, the dorso-ventral diameter being greater than the lateral.

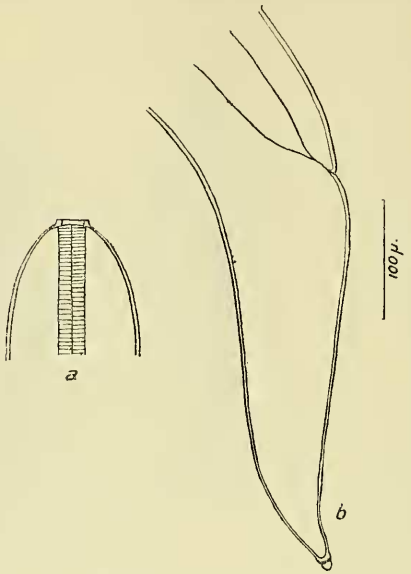
Four submedian head papillæ are present, 40 μ from the anterior end of the body.

The nerve ring is situated 200 μ from the opening of the mouth.

Female 115 mm. in length and ·5 mm. in maximum breadth. Œsophagus has a total length of 7·2 mm. and a maximum breadth of 110 μ.

The anterior portion of the œsophagus is 400 μ in length.

Text-figure 9.



Setaria javensis, sp. n.

a. Cephalic extremity of female.
b. Caudal extremity of female.

The anus is distant 320 μ from the caudal extremity, which tapers gradually and ends in a small knob. The vulva is situated at a point 500 μ from the anterior end. Ovoviviparous.

The embryos *in utero* measure 210μ × 7μ.

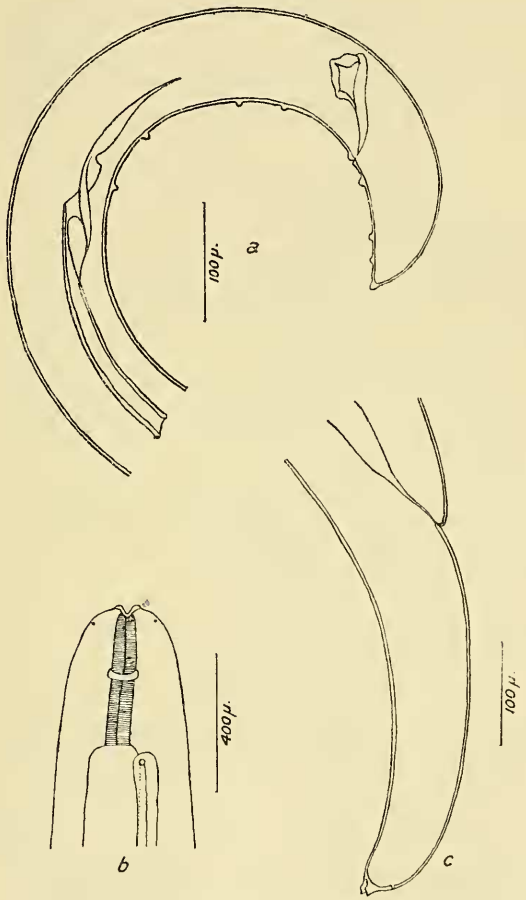
In addition to the foregoing species, I recovered another Filariid worm from the abdominal cavity of the same host (*Tragulus stanleyanus*). This species is evidently very closely related to the genus *Setaria*, but there are two points of generic importance which separate it from this genus—namely, the structure of the mouth-parts and the presence of bosses irregularly scattered over the cuticle of both sexes; in other respects it agrees with the generic diagnosis of *Setaria*, as given by Boulenger (**15**).

PAPILLOSETARIA, gen. n.

Generic diagnosis.—*Filariinæ*: Body cylindrical, filiform, tapering considerably at the posterior extremity in both sexes.

The mouth is guarded by two lateral lips, which are lined by

Text-figure 10.



Papillosetaria traguli, gen. n., sp. n.

a. Caudal end of male, showing spicules and papillæ.
b. Cephalic extremity of female, showing vulva.
c. Caudal extremity of female.

an oval ring of chitin. The cuticle of both sexes is covered irregularly with bosses, except in the regions of the head and tail. There are four head papillæ—two lateral and two sub-

median. The œsophagus consists of two parts—a short anterior portion and a longer and thicker posterior portion.

The male is smaller than the female, its attenuated caudal extremity ending in a close spiral. Preanal and postanal papillæ are present. The spicules are unequal, the longer consisting of two parts, the shorter dagger-shaped with an expansion at the proximal end.

The tail of the female is curved dorsally, and bears two lateral appendages close to the caudal extremity. The vulva is near the anterior end of the body. The eggs are thin-shelled. Ovoviviparous, parasitic in the peritoneal cavity of mammals.

Type-species, *Papillosetaria tragŭli*, sp. n.

Papillosetaria tragŭli, sp. n.

Host. Tragulus stanleyanus.

Habitat. Peritoneal cavity.

Locality. Java.

Specific diagnosis.—Papillosetaria: Body tapering at both extremities, more especially towards the tail. Head rounded, not separated from the remainder of the body. The mouth is guarded by two lips, lined by an oval ring of chitin which projects very slightly beyond the mouth. The head is surrounded by four papillæ: two lateral and two submedian. The body, with the exception of the two extremities, is irregularly studded with small cuticular bosses.

Male.—Length 5·7 cm.; maximum breadth 280 μ.

The anterior portion of the œsophagus measured 500 μ in length, the posterior region 9·1 mm.

The nerve ring is 200 μ distant from the anterior end.

The tail is coiled in a close spiral.

The ano-genital opening is 120 μ from the caudal extremity, which ends in a small rounded knob.

There are three pairs of postanal and four pairs of preanal papillæ.

The spicules are unequal, the larger measuring 370 μ in length and consisting of two portions—an anterior cylindrical portion and a terminal twisted portion ending in a sharp point.

The shorter spicule is 85 μ in length, and also consists of two portions—a proximal expanded portion and a distal dagger-shaped portion.

Female.—Length 14·5 cm.; maximum breadth 460 μ.

Anterior portion of the œsophagus is 400 μ long, the posterior portion 9·6 mm.

The anus is ·5 mm. from the caudal extremity; the tail portion has a distinct curve dorsally.

The tail ends in a bifid appendage; near the extremity are two lateral appendages.

The vulva is 650 μ from the head end.

Ovoviviparous; embryos measure 230 μ in length.

NEMATODE PARASITES ARRANGED ACCORDING TO HOSTS.

MAMMALIA.

PRIMATES.

CERCOPITHECIDÆ.

MACACUS NEMESTRINUS. Pig-tailed Macaque. India.

†*Characostomum asmilium* R., H. & Joyeux, 1913.
Œsophagostomum apiostomum (Willach, 1891), R. & H., 1905.
Trichuris trichiura (Linnæus, 1771), Stiles, 1901.
†*Streptopharagus armatus* Blanc, 1912.

MACACUS RHESUS. Rhesus Monkey. India.

Œsophagostomum apiostomum (Willach, 1891), R. & H., 1905.
Trichuris trichiura (Linnæus, 1771), Stiles, 1901.
†*Spirocerca sanguinolenta* (Rud., 1819), R. & H., 1911.

PAPIO SPHINX. Guinea Baboon. Africa.

Trichuris trichiura (Linnæus, 1771), Stiles, 1901.

CEBIDÆ.

CEBUS FATUELLUS. Brown Capuchin. Guiana.

Filaria gracilis Rudolphi, 1809.

LAGOTHRIX INFUMATUS. Smoky Woolly Monkey. S. America.

Filaria gracilis Rudolphi, 1809.

CALLITHRIX JACCHUS. Common Marmoset. Brazil.

Subulura distans (Rudolphi, 1809), R. & H., 1912.

PROSIMIÆ.

LEMURIDÆ.

NYCTICEBUS TARDIGRADUS. Slow Loris. Malay.

†*Ancylostoma malayanum* (Alessandrini, 1905), R. & H., 1909.
†*Characostoma asmilium*, R., H. & Joyeux, 1913.

CARNIVORA.

FELIDÆ.

FELIS LEO. Lion. Africa.

Toxascaris leonina (v. Linstow, 1902), R. & H., 1911.

FELIS TIGRIS. Tiger. Malay.

Belascaris mystax (Zeder, 1800), Leiper, 1907.
Galoncus pernicosus (v. Linstow, 1886), Railliet, 1918.
Ancylostoma ceylanicum Looss, 1911.
†*Ancylostoma pluridentatum* (Alessandrini, 1905), R. & H., 1909.
Cylicospirura subæqualis (Molin, 1860), gen. n.

FELIS PARDUS. Leopard. India.
Belascaris mystax (Zeder, 1800), Leiper, 1907.
Gnathostoma spinigerum Owen, 1836.
Ancylostoma ceylanicum Looss, 1911.

FELIS NEBULOSA. Clouded Tiger. Assam.
Belascaris mystax (Zeder, 1800), Leiper, 1907.
Gnathostoma spinigerum Owen, 1836.
Galoncus tridentatus Khalil, 1922.
Ancylostoma ceylanicum Looss, 1911.
†*Habronema chevreuxi* Seurat, 1913.

FELIS VIVERRINA. Viverrine Cat. India.
Belascaris mystax (Zeder, 1800), Leiper, 1907.
Ancylostoma ceylanicum Looss, 1911.

FELIS BENGALENSIS. Leopard Cat. E. Indies.
Belascaris mystax (Zeder, 1800), Leiper, 1907.
Gnathostoma spinigerum Owen, 1836.
†*Troglostrongylus troglostrongylus*, gen. n., sp. n.

FELIS SYLVESTRIS. Wild Cat. Inverness-shire.
Belascaris mystax (Zeder, 1800), Leiper, 1907.

CYNÆLURUS JUBATUS. Cheetah. Africa.
Belascaris mystax (Zeder, 1800), Leiper, 1907.

VIVERRIDÆ.

PARADOXURUS HERMAPHRODITUS. Malayan Paradoxure. Malay.
Gnathostoma spinigerum Owen. 1836.
Rictularia plagiostoma (Wedl, 1861), Will.-Suhm, 1873.

MUNGOS MUNGO. Indian Mongoose. India.
†*Filaria martis* Gmelin, 1790.

CANIDÆ.

VULPES VULPES. Common Fox. Britain.
Belascaris marginata (Rud., 1802), Gedoelst, 1911.
Rictularia affinis Jägerskiold, 1910.
Uncinaria criniformis (Goeze, 1782), Railliet, 1899.

CANIS LAGOPUS. Arctic Fox. Arctic regions.
Toxascaris limbata R. & H., 1911.

CANIS PRIMÆVUS. Indian Hunting Dog. India.
Spirocerca sanguinolenta (Rud., 1819), R. & H., 1911.

CANIS AUREUS. Common Jackal. India.
Toxascaris limbata R. & H., 1911.
Ancylostoma caninum (Ercolani, 1859), Hall, 1913.

CANIS JUBATUS. Red Wolf. S. America.
Ancylostoma caninum (Ercolani, 1859), Hall, 1913.

CANIS OCCIDENTALIS. Arctic Wolf. S. America.
Toxascaris limbata R. & H., 1911.

†CANIS AZARÆ. Azara's Fox. S. America.
Rictularia cahirensis Jägerskiold, 1910.

LYCAON CAPENSIS. Cape Hunting Dog. S. Africa.
Belascaris marginata (Rud., 1802), Gedoelst, 1911.
Toxascaris limbata R. & H., 1911.

MUSTELIDÆ.

CONEPATUS PROTEUS. Cordova Skunk. Argentine.
Ancylostoma conepati Solanet, 1911.

URSIDÆ.

URSUS ARCTOS. Brown Bear. Caucasus.
Ascaris transfuga Rudolphi, 1819.

OTARIIDÆ.

OTARIA CALIFORNIANA. Californian Sea-Lion. N. Pacific.
Contracœcum osculatum (Rud., 1802), Baylis, 1920.

PROBOSCIDEA.

ELEPHANTIDÆ.

ELEPHAS INDICUS. Indian Elephant. India.
†*Leiperenia galebi* Khalil, 1922.

UNGULATA.

EQUIDÆ.

EQUUS ONAGER. Onager. African origin. Bred in Gardens.
Strongylus vulgaris (Looss, 1900), R. & H., 1909.
Strongylus edentatus (Looss, 1900), R. & H., 1909.
Cylicostomum nassatum (var. *parvum*), Yorke & McFie, 1918.
Cylicostomum bicoronatum (Looss, 1900), Gedoelst, 1903.
Cylicostomum goldi Boulenger, 1916.
Oxyuris equi Schrank, 1788.

EQUUS GREVYI. Grevy's Zebra. Africa.
Probstmayria vivipara Ransom, 1907.
Cylicostomum nassatum (var. *parvum*), Yorke & McFie, 1918.
Strongylus vulgaris (Looss, 1900), R. & H., 1909.

BOVIDÆ.

CEPHALOPHUS sp. Duiker. S. Africa.

Setaria labiato-papillosa (Alessandrini, 1838), R. & H., 1911.

HIPPOTRAGUS EQUINUS. Roan Antelope. Africa.

†*Setaria hornbyi* Boulenger, 1920.

Hæmonchus contortus (Rud., 1803), Cobbold, 1898.

OVIS VIGNEI. Urial Gad. India.

Trichuris ovis (Abildg., 1795), Smith, 1908.

AMMOTRAGUS LERVIA. Barbary Sheep. Morocco.

Hæmonchus contortus (Rud., 1803), Cobbold, 1898.

TRAGULIDÆ.

TRAGULUS STANLEYANUS. Stanley's Chevrotain. Java.

†*Setaria javensis*, sp. n.

†*Papillosetaria tragüli*, gen. n., sp. n.

[† Signifies that the parasite has not been found in this host before.]

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